

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection**

B279543680

<b>FACILITY:</b> DTE Electric Company - Colfax Peaking Facility		<b>SRN / ID:</b> B2795
<b>LOCATION:</b> 4025 GREGORY, FOWLERVILLE		<b>DISTRICT:</b> Lansing
<b>CITY:</b> FOWLERVILLE		<b>COUNTY:</b> LIVINGSTON
<b>CONTACT:</b> Franklin LeForce , Senior Environmental Specialist - EMR		<b>ACTIVITY DATE:</b> 03/06/2018
<b>STAFF:</b> Julie Brunner	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> This was a scheduled inspection for the purpose of determining compliance with the Renewable Operating Permit (ROP) No. MI-ROP-B2795-2016.		
<b>RESOLVED COMPLAINTS:</b>		

On March 6, 2018, DEQ-AQD staff conducted a scheduled inspection as part of a Full Compliance Evaluation (FCE) of DTE-Electric Company Colfax Peakers (DTE - Colfax). Flame resistant clothing, hard hat, safety glasses, hearing protection, and hard soled boots/shoes are required to be worn when on-site. The last inspection of this facility was on October 27, 2015.

**Contacts:**

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Ms. Stefanie P Zanke, Env. Specialist, stefanie.zanke@dteenergy.com

**Facility Description:**

DTE - Colfax is a peaker station power plant that consists of five (5) diesel fuel-fired engines that provide electric power to the transmission grid during peak electrical demand periods or when required for load stability. The engines were installed in 1969. The five (5) engines are identical GM Power, EMD MP45 diesel fuel-fired compression ignition (CI) reciprocating internal combustion engines (RICE), non-emergency, non-black start. The engines are 20 cylinders each rated at 2.75 megawatts (MW) or about 3600 horsepower (hp). The engines are electric start and are capable of being remotely started from DTE headquarters. An on-site operator is not required.

DTE – Colfax is located west of Fowlerville and south of W. Grand River Avenue in a mainly rural area. Industrial/commercial property is located to the east and west. Farmland is to the north and south of the facility with some residential housing in the surrounding area.

**Regulatory Overview:**

DTE – Colfax is subject to Title V – Renewal Operating Permit (ROP) Program because the potential to emit (PTE) of carbon monoxide (CO) and nitrogen oxides (NOx) exceeds 100 tons per year (tpy). The stationary source is a minor source of hazardous air pollutant (HAP) emissions because the PTE of any single HAP regulated by Section 112 of the federal Clean Air Act (CAA) is less than 10 tpy and the PTE of all HAPs combined are less than 25 tpy. The facility operates per the conditions of ROP No. MI-ROP-B2795-2016.

DTE – Colfax is an existing Prevention of Significant Deterioration (PSD) source due to the PTE of greater than 250 tpy of NOx. The five (5) diesel fuel-fired engines have not been subject to review according to the PSD regulations under Part 18. Prevention of Significant Deterioration in the Michigan Air Pollution Control Rules or 40 CFR 52.21 because the process equipment was constructed/installed prior to June 19, 1978, the promulgation date of the PSD regulations. Although the five (5) diesel fuel-fired engines identified as EUDG11-1, EUDG11-2, EUDG11-3, EUDG11-4, and EUDG11-5 were installed after August 15, 1967, this equipment was exempt from New Source Review (NSR) permitting requirements at the time of installation. However, future modifications of this equipment may be subject to NSR.

40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) – This subpart establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with emission and operating limitations. DTE – Colfax is an area source and each engine is considered a non-emergency, non-black start, existing stationary compression ignition (CI) RICE. DCL DC69.5-22 catalytic converters were installed on the engines in 2012 per exemption Rule 285(2)(e) to meet the requirements of 40 CFR 63, Subpart ZZZZ. The applicable requirements of 40 CFR Part 63, Subpart ZZZZ were incorporated with the last ROP renewal.

The following is a list of emission units that are on ROP No. MI-ROP-B2795-2016 plus exempt equipment that is not on the ROP:

<b>Emission Unit ID</b>	<b>Emission Unit Description</b>	<b>Install/Modify Date</b>	<b>App. Req.</b>
EUDG11-1	No. 1 compression ignition (CI) reciprocating internal combustion engine (RICE). Fueled by No. 2 fuel oil and rated at 2.75 MW or about 3600 hp. Equipped with a CO oxidation catalyst.	07-01-1969 / 10-26-2012	Rule 285(2)(g); 40 CFR 63, Subpart ZZZZ
EUDG11-2	No. 1 compression ignition (CI) reciprocating internal combustion engine (RICE). Fueled by No. 2 fuel oil and rated at 2.75 MW or about 3600 hp. Equipped with a CO oxidation catalyst.	08-01-1969 / 10-26-2012	Rule 285(2)(g); 40 CFR 63, Subpart ZZZZ
EUDG11-3	No. 1 compression ignition (CI) reciprocating internal combustion engine (RICE). Fueled by No. 2 fuel oil and rated at 2.75 MW or about 3600 hp. Equipped with a CO oxidation catalyst.	07-01-1969 / 10-26-2012	Rule 285(2)(g); 40 CFR 63, Subpart ZZZZ
EUDG11-4	No. 1 compression ignition (CI) reciprocating internal combustion engine (RICE). Fueled by No. 2 fuel oil and rated at 2.75 MW or about 3600 hp. Equipped with a CO oxidation catalyst.	07-01-1969 / 10-26-2012	Rule 285(2)(g); 40 CFR 63, Subpart ZZZZ

Emission Unit ID	Emission Unit Description	Install/Modify Date	App. Req.
EUDG11-5	No. 1 compression ignition (CI) reciprocating internal combustion engine (RICE). Fueled by No. 2 fuel oil and rated at 2.75 MW or about 3600 hp. Equipped with a CO oxidation catalyst.	08-01-1969 / 10-26-2012	Rule 285(2) (g); 40 CFR 63, Subpart ZZZZ
Horizontal storage tank	28,000-gallon No.1 or 2 fuel oil (diesel) tank with secondary containment	NA	Rule 284(2) (d)

### **Michigan Air Emissions Reporting System (MAERS):**

The facility reports to MAERS as an Major, Category I fee subject.

2016 Reporting Year Results for FGPEAKERS (EUDG11-1, EUDG11-2, EUDG11-3, EUDG11-4, EUDG11-5):

CO – 1.0 tpy

NOx – 18.9 tpy

PM10, primary – 0.34 tpy

PM2.5, primary – 0.32 tpy

SO2 – 0.0089 tpy

VOC – 0.59 tpy

Actual emissions from the facility are low because as a peaking station, the engines do not operate very often. But, the engines operate at full capacity when called into service.

### **Inspection:**

Arrived: 9:55 am

Departed: 11:00 am

Weather: 31°F, wind ESE @ 7 MPH, UV 0 Low

No visible emissions (VEs) were observed from any of the facility operations. No odors were identified surrounding the facility.

I pulled up to the gate followed by Mr. Frank LeForce (Sr. Env. Specialist), and a DTE assistant operator met us. Seth Buchinger, the DTE station operator arrived, signed us in and provided the safety orientation. We discussed the operations at the peaking station and the requirements of the ROP.

There is a building on-site with an office and electrical equipment. Building heat is electrical and there are no parts washers located at the facility.

Each engine has a separate enclosure shed. The engines are vented on the roof of the shed and the catalyst is installed in a horizontal run of ductwork on the roof. A short elbow directs the exhaust gases upwards to the ambient air about 10 to 15 feet from ground level. The engines are numbered from 1 to 5 going from east to west in a row. None of the engines were operating. The engines run mainly in summer and during really cold winter weather. The last time they were operated was in January.

The engines are remotely started, and startup typically lasts 15 minutes (in accordance with SC III.4). The engines do have a catalyst alarm that is triggered when inlet temperature is too low. A contractor is called when this happens. Differential pressure is also monitored. All operating data is recorded electronically in accordance with the site-specific monitoring plan as required by special

conditions (SC) III.5 and III.6. All engine operating data is electronically recorded downtown. The operating records are not kept on-site.

From the clocks on each engine, the following operating hours were recorded:

EUDG11-1	16,609.3 hours
EUDG11-2	21,521.8 hours
EUDG11-3	20,255.7 hours
EUDG11-4	20,472.1 hours
EUDG11-5	21,431.7 hours

Stack testing for compliance with the CO emission limit in SC I.1 has been completed as required by SC V.1. Unit 11-1 was tested on October 26, 2015 with a CO destruction efficiency (reduction) of 85.6%. Unit 11-3 was tested on October 27, 2015 with a CO destruction efficiency of 87.2%. Unit 11-4 was tested on October 27, 2015 with a CO destruction efficiency of 85.5%. Unit 11-2 was not tested in fall of 2015 due to operational issues. Unit 11-5 did not meet the 40 CFR 63, Subpart ZZZZ requirements during the fall 2015 testing as the catalyst inlet temperature recorded did not meet the protocol requirements. A retest was scheduled for Units 11-2 and 11-5. The testing was performed on March 1, 2016 with the following CO destruction efficiency results: Unit 11-2 at 70.6% and Unit 11-5 at 73.1%. All engines passed the 70% reduction standard. The testing is required every 8,760 hours or 3 years, whichever comes first.

#### Horizontal Storage Tank:

A 28,000-gallon horizontal fuel storage tank with secondary containment contains the diesel fuel for the engines. The tank is exempt from permitting per Rule 284(2)(d) and not required to be on the ROP. It was observed to be well maintained with no leaks or drips. The secondary containment was competent. There were 25,610 gallons of diesel fuel in the tank. Oil volume in the tank is not allowed to fall below a minimum of 2,000 to 5,000 gallons before refilling. There is one flow meter that measures volume of fuel oil dispensed to all five (5) engines.

#### Records Review:

The following records were requested and/or obtained during the inspection based on the special conditions in ROP No. MI-ROP-B2795-2016 starting from my last inspection: March 2016 to February 2018:

SC VI.1 The permittee shall maintain a complete record of fuel oil specifications and/or a fuel oil analysis for each delivery, or storage tank, of fuel oil. These records may include purchase records for ASTM specification fuel oil, specifications or analyses provided by the vendor at the time of delivery, analytical results from laboratory testing, or any other records adequate to demonstrate compliance with the percent sulfur limit in fuel oil. **(40 CFR 63.6604, 40 CFR 63.6660)**

A copy of the Fuel Oil Supply Agreement dated December 9, 2016 between Marathon and DTE was provided for Ultra Low Sulfur No. 2 Diesel (No. 2MV15). It automatically renewed for 3 years which includes 2018. It lists sulfur by wt. as 15 ppm (0.0015% by wt) and a Cetane Index of 40 min. The oil is also sampled about twice a year. Samples collected on November 30, 2016, January 31, 2017, October 31, 2017, and January 31, 2018 all had a sulfur content of 0.0010% by wt. The sample collected on November 30, 2016 was also analyzed for metals. Compliance with SC II.1 was demonstrated.

SC VI.5 The permittee shall maintain records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or of the air pollution control and monitoring equipment. These records shall be kept on file and made available to the Department upon request. **(40 CFR 63.6655(a)(2), 40 CFR 63.6660)**

Per the SSM and CPMS plans dated July 2015 (copy provided), malfunctions are included in the semiannual compliance report. There have been no malfunctions/deviations reported since the last inspection up to the 1<sup>st</sup> semiannual compliance report for 2017.

SC VI.7 The permittee shall maintain records of all required maintenance performed on the air pollution control and monitoring equipment. These records shall be kept on file and made available to the Department upon request. **(40 CFR 63.6655(a)(4), 40 CFR 63.6660)**

Maintenance and inspection records are managed electronically. Copies of the annual maintenance inspections for 2016 and 2017 were provided and a snap shot from the database shows annual and semi-annual activities.

SC VI.8 The permittee shall maintain records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. These records shall be kept on file and made available to the Department upon request **(40 CFR 63.6655(a)(5), 40 CFR 63.6660)**

There have been no malfunctions of the air pollution control and monitoring equipment since the last inspection.

SC VI.9 The permittee shall maintain the following records for each CPMS on file and make available to the Department upon request:

- a. Records described in 40 CFR 63.10(b)(2)(vi) through (xi).
  - b. Previous (i.e., superseded) versions of the performance evaluation plan as required in 40 CFR 63.8(d)(3).
  - c. Requests for alternatives to the relative accuracy test for CEMS or CPMS as required in 40 CFR 63.8(f)(6)(i), if applicable
- (40 CFR 63.6655(b), 40 CFR 63.6660)**

A copy of the 2016 and 2017 Performance Evaluation on the CPMS was provided. Compliance with SC IV.7 to conduct an annual evaluation of the CPMS was demonstrated. Also, calibration checks on the catalyst monitor systems did product an error in the first 4-hour rolling average, the first time the engines were run after calibration. The temperature was reported as zero. The temperature is recorded and logged separately, but the actual four-hour rolling average will need to be calculated for the engines after calibration (~4-hours). This was listed as a "SEE COMMENT, Not a deviation" on the records provided for SC VI.10, however the data in this area was grayed out and no proof that the temperature was measured is in the table. The raw data was requested for April 2017 and provided with only one data point on EUDG11-1 missing.

SC VI.10 The permittee shall maintain the following records as required to demonstrate continuous compliance with the operating limitations in SC III.1 and SC III.2. These records shall be kept on file and made available to the Department upon request:

- a. Catalyst inlet temperature data reduced to 4-hour rolling averages; and
- b. Pressure drop across the catalyst measured monthly.

**(40 CFR 63.6655(d), 40 CFR 63.6660, 40 CFR 63 – Table 6(10))**

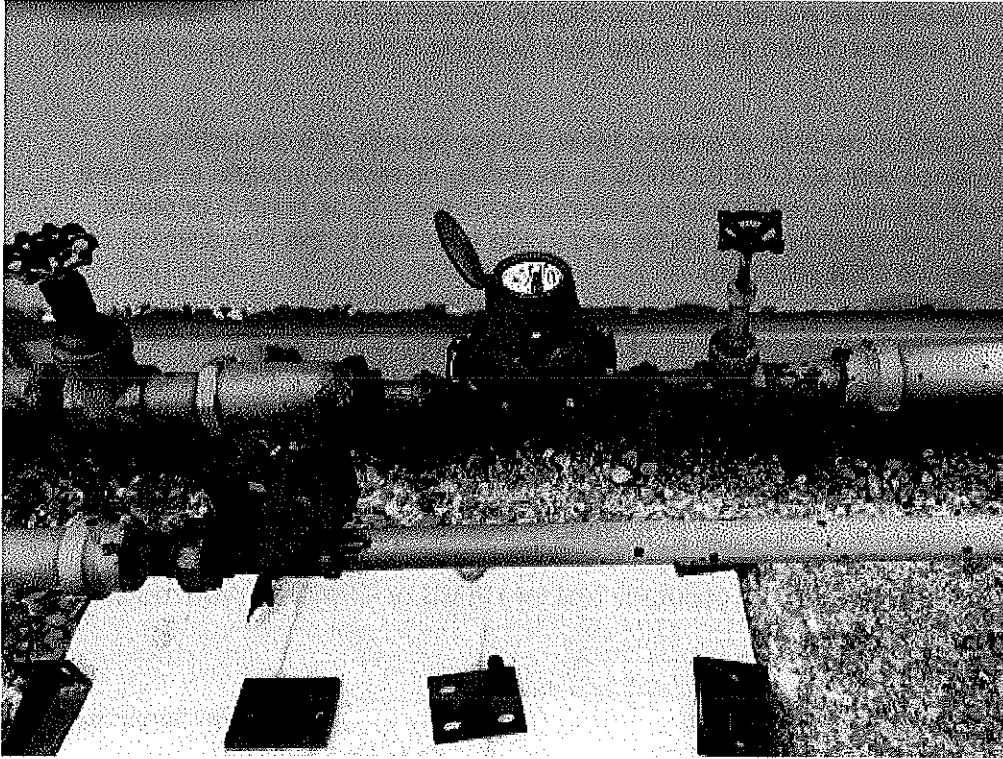
A copy of the 2016 and 2017, and Jan. 2018 records showing the differential pressure and temperature (4-hour rolling average) was provided. The measurements were presented for every 15 minutes of operation. They appeared to be within the required ranges. Temperatures below 450°F that occurred after the calibration issue were identified as startup or shutdown.

All records obtained in the course of this compliance inspection are attached to the paper file copy of this report.

Annual and semi-annual certifications, and deviation reports are received on time. No deviations have been reported since the last inspection.

Summary:

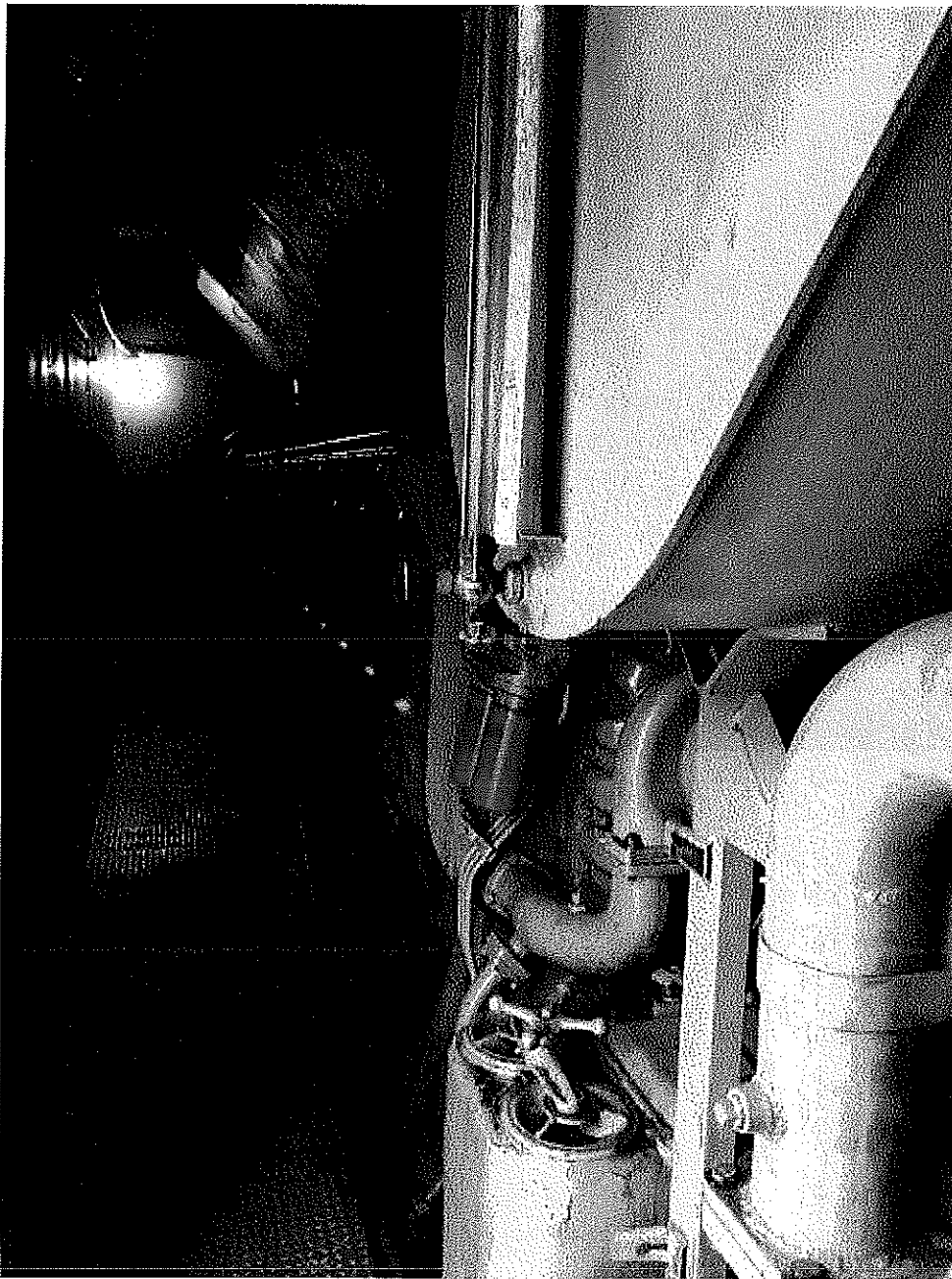
No instances of noncompliance with the conditions of ROP No. MI-ROP-B2795-2016 were identified with this scheduled inspection.



**Image 1(1) :** Flow meter that measures volume of fuel oil dispensed to all five (5) engines.

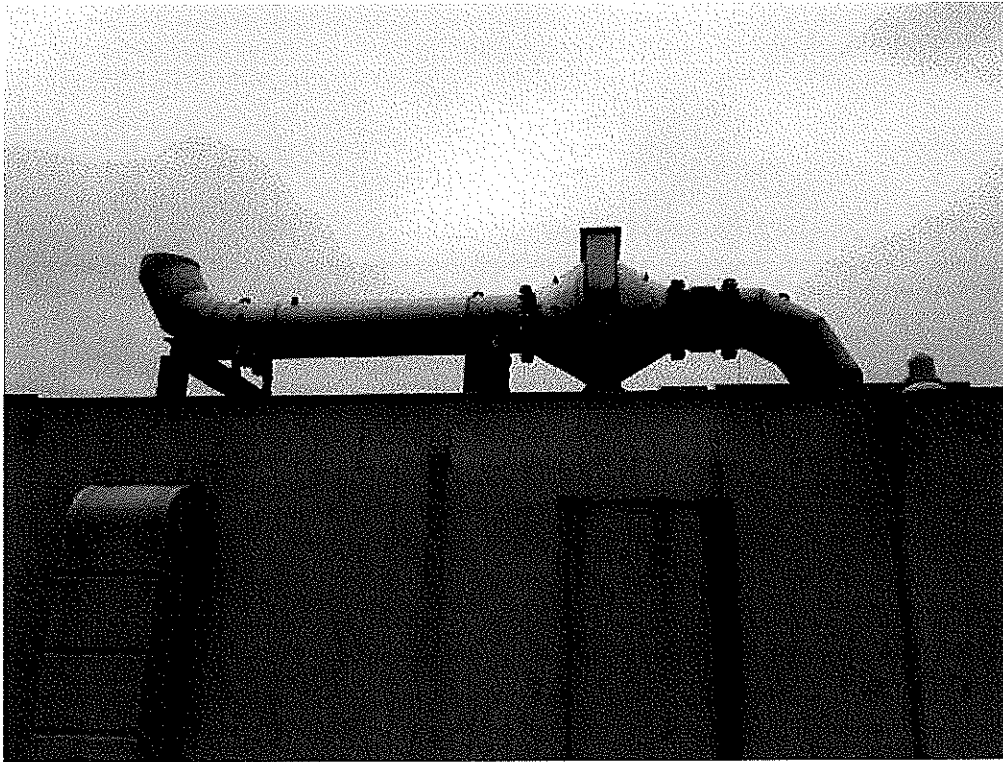


**Image 2(2)** : Colfax engines



**Image 3(3) :** Engine 5





**Image 4(4) :** CO catalyst on Engine 5

NAME Julio L. Brown

DATE 3/19/18

SUPERVISOR J.M.

